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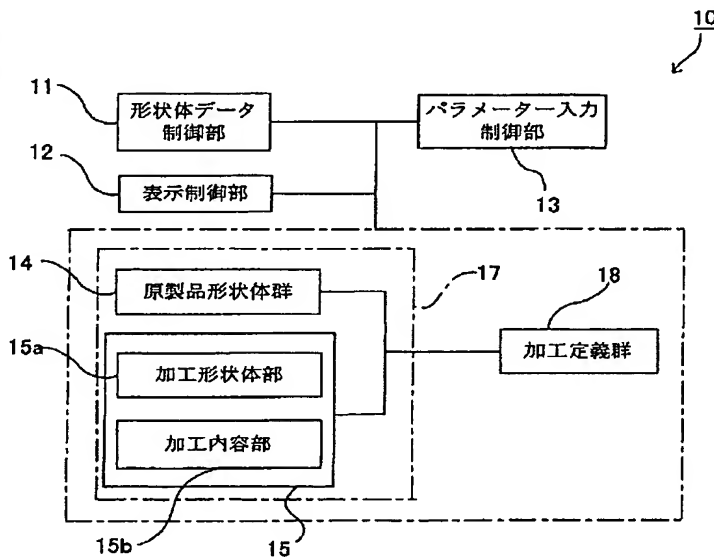
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(81) 指定国 (国内): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,

[続葉有]

(54) Title: CAD SYSETM. PROGRAM FOR RUNNING THE SYSTEM, AND RECORDING MEDIUM HAVING THE PROGRAM RECORDED THEREIN

(54) 発明の名称: CADシステム並びにこれを実行するためのプログラム及びこのプログラムを記録した記録媒体



(57) Abstract: A CAD system capable of generating the shape body of a machined portion and the contents of machining by automatically recognizing the machined portion by utilizing CAD data on product shape only, comprising a machining information group (15) having a machined shape body part (15a) storing the portion where material is removed by machining as the shape body for each machining and a machining contents part (15b) storing tools and parameters as information on the contents of machining in connection with the shape body and a machining definition group (18) defining a plurality of machining types beforehand.

11...SHAPE BODY DATA CONTROL PART
12...DISPLAY CONTROL PART
13...PARAMETER INPUT CONTROL PART
14...ORIGINAL PRODUCT SHAPE BODY GROUP
15a...MACHINED SHAPE BODY PART
15b...MACHINING CONTENTS PART
18...MACHINING DEFINITION GROUP

[続葉有]

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Fig.1

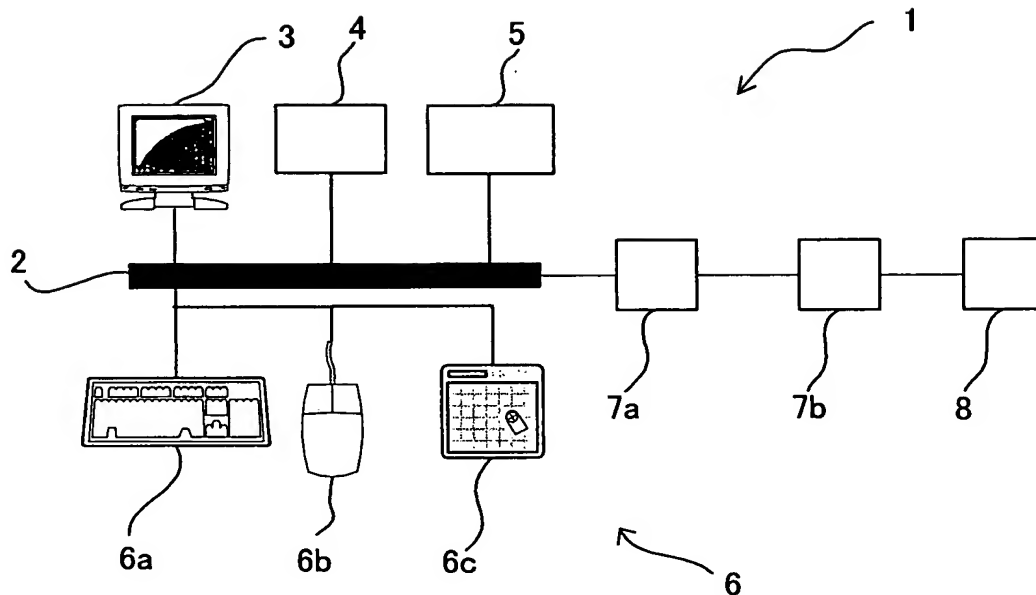
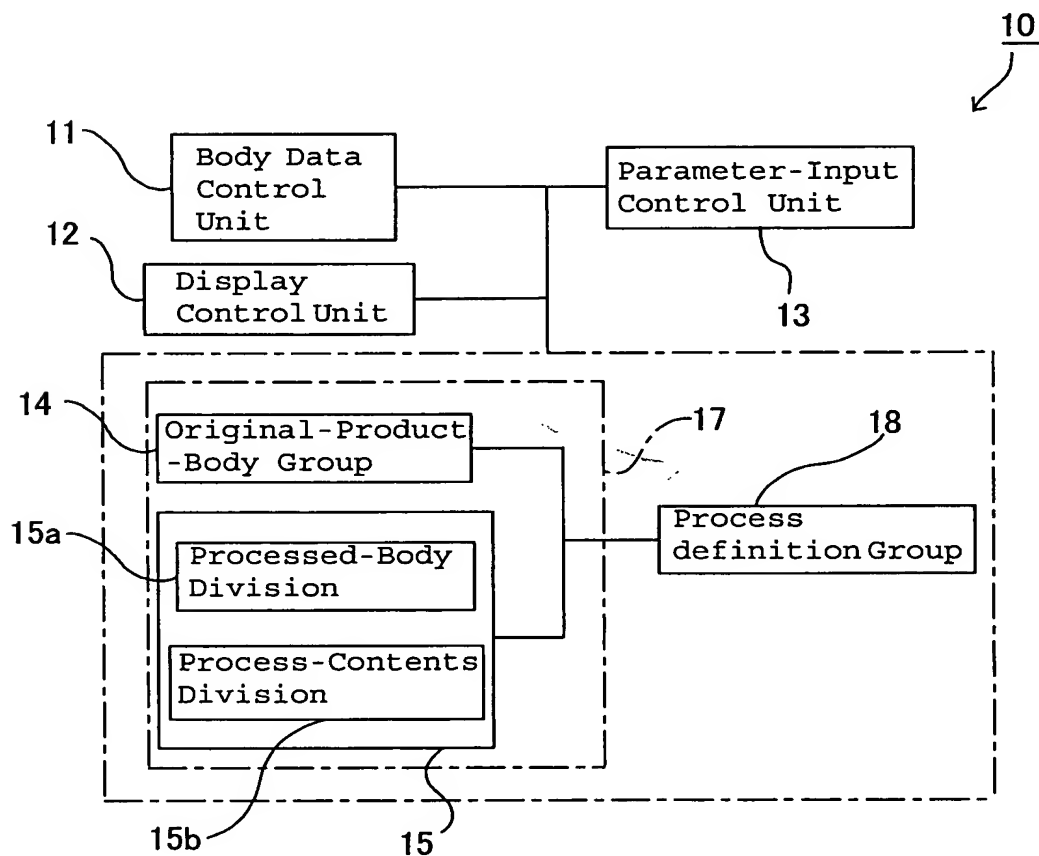
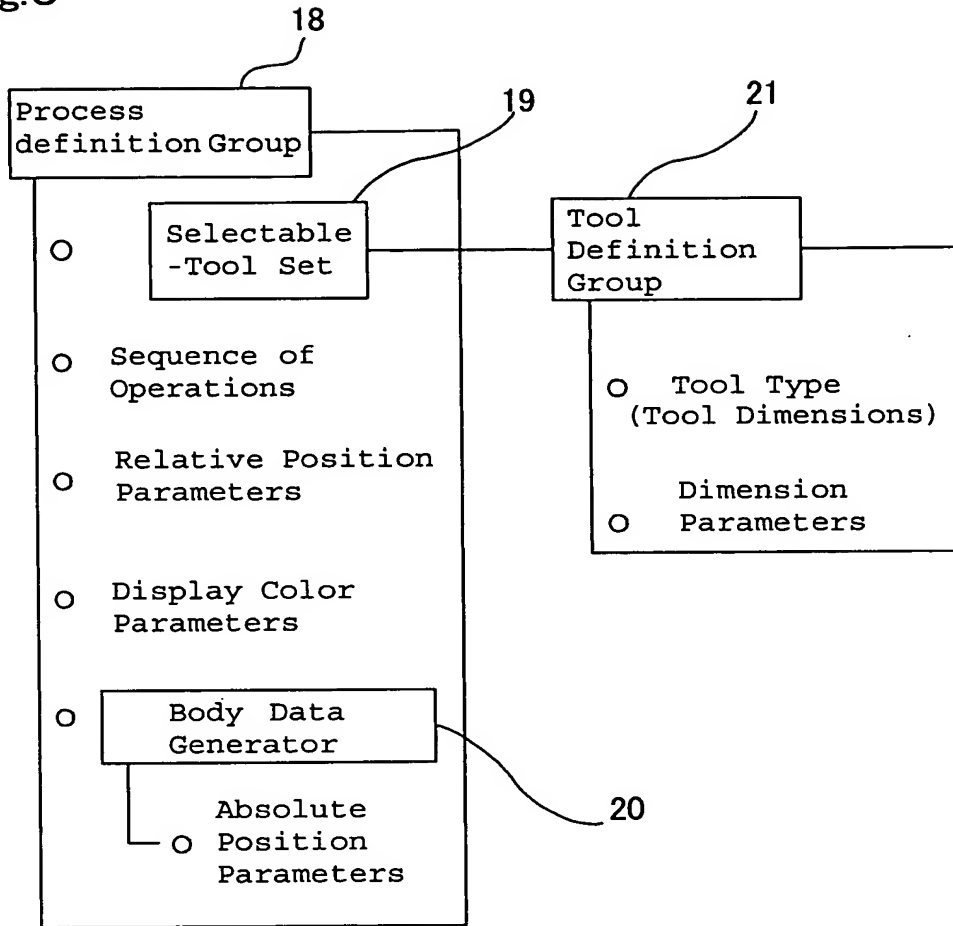


Fig.2



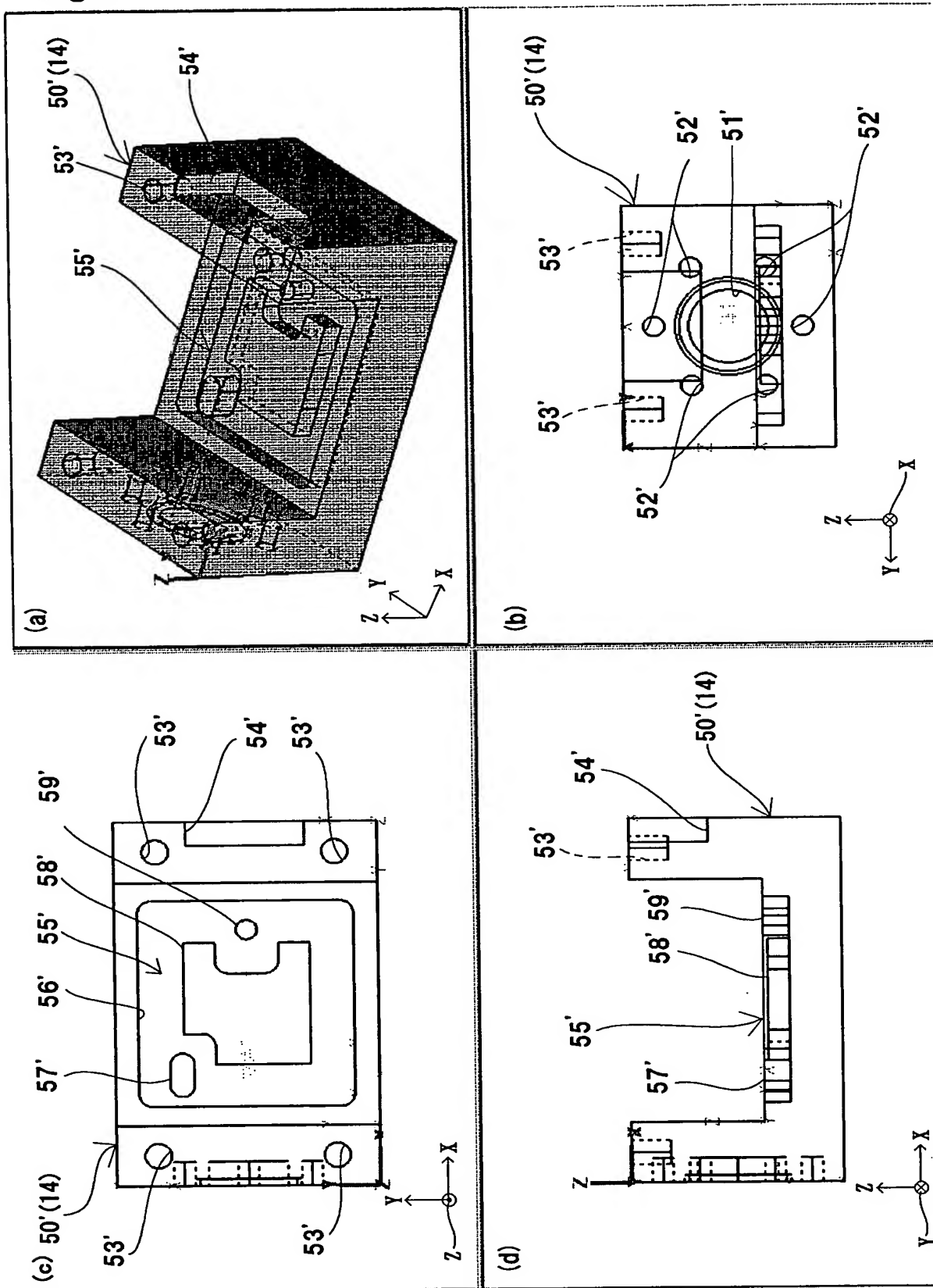
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Fig.3



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Fig. 4



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Fig.5

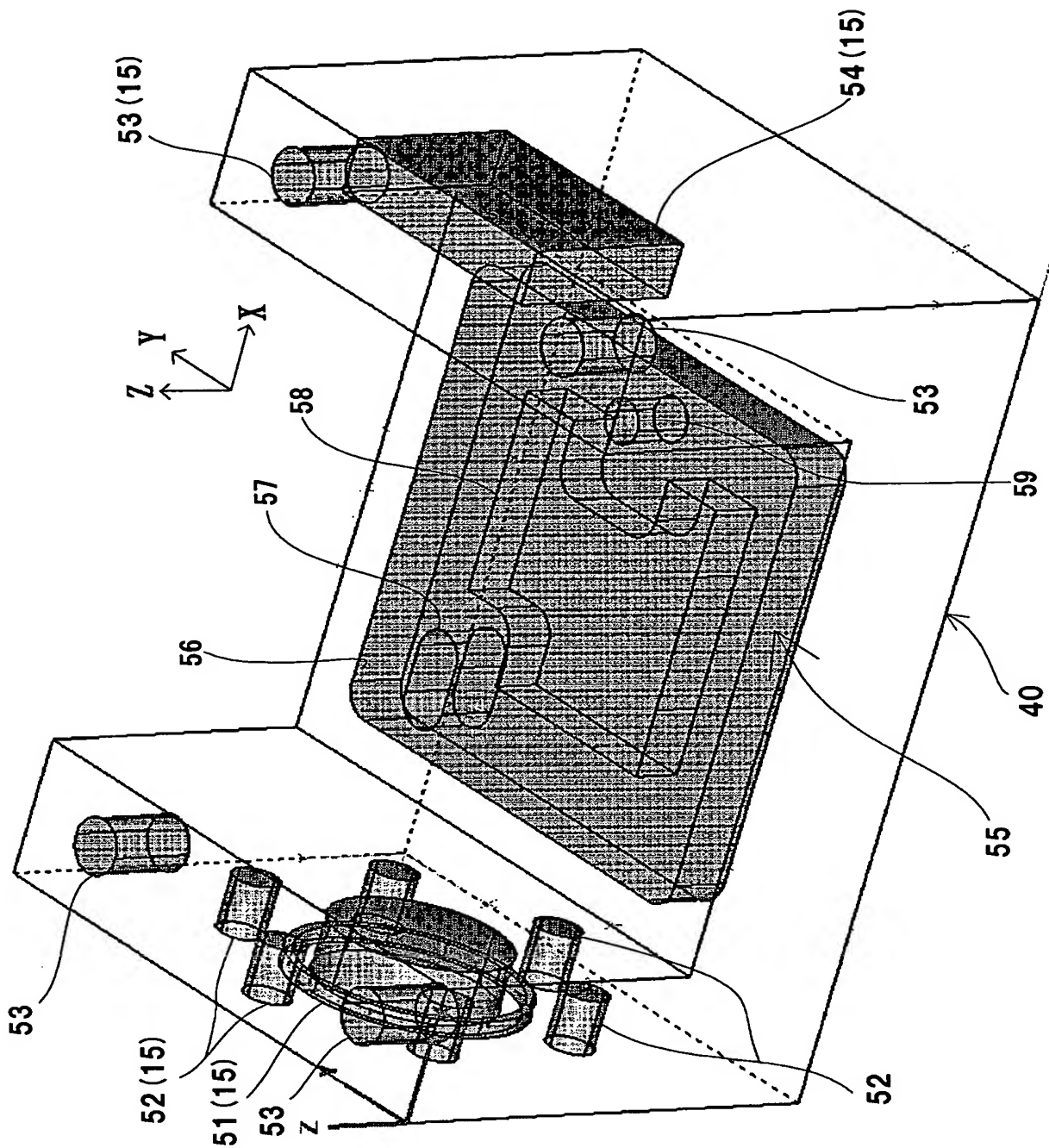
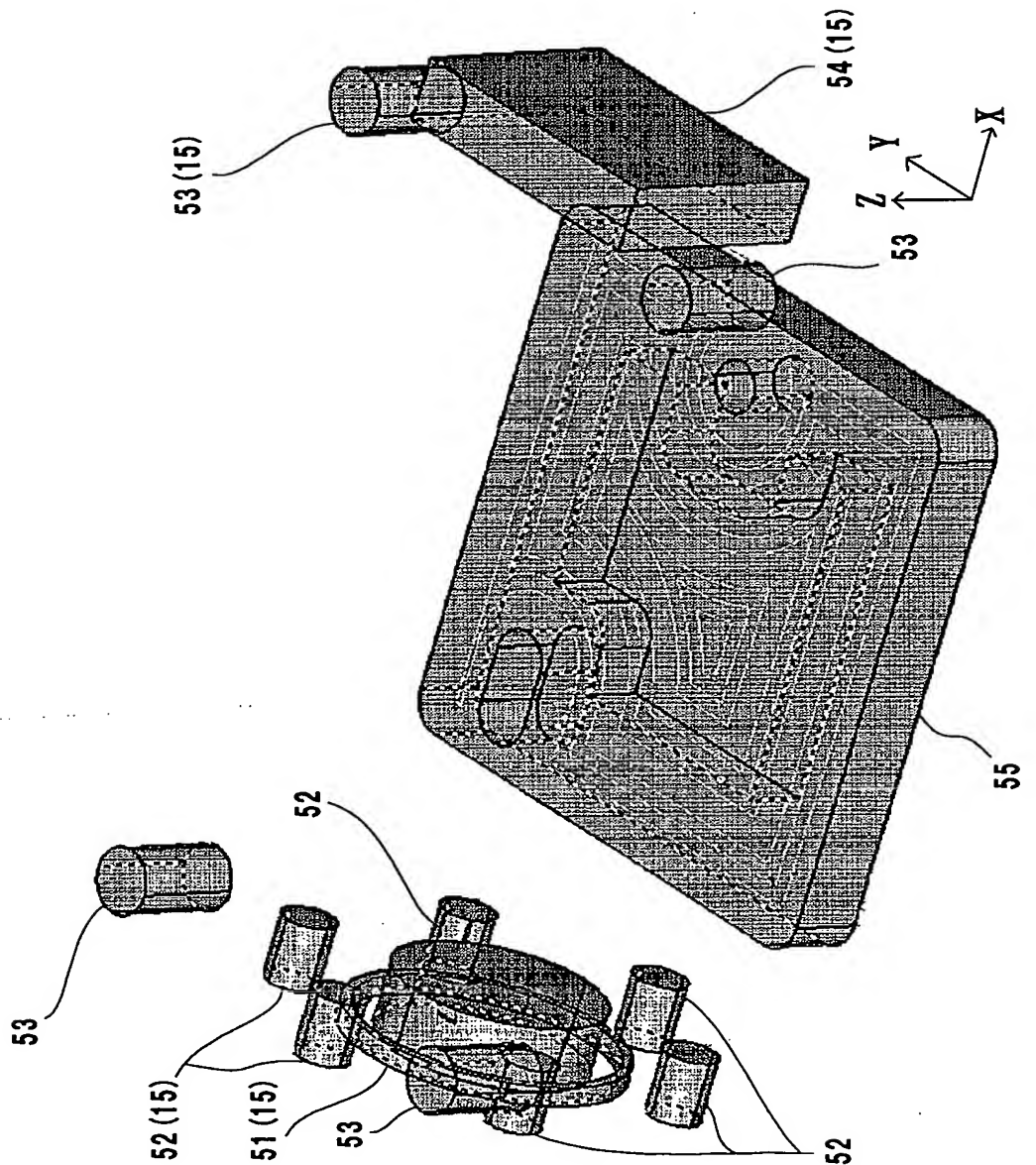
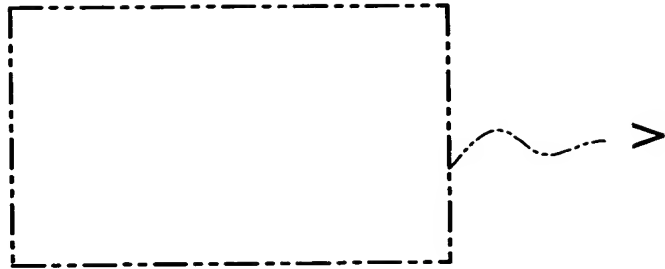


Fig.6



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Fig.7

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Tool List

No	Tool Name	Diameter	Surface	Machining No.
1	Center drill	3,000	0	1
2	Center drill	3,000	0	2
3	Center drill	3,000	2	4
4	Center drill	3,000	2	5
5	Drill (High speed)	8,000	2	4
6	Drill (High speed)	8,000	2	5
7	Drill (High speed)	9,000	0	1
8	Drill (High speed)	10,000	0	2
9	Drill (High speed)	10,000	0	2
10	Drill (High speed)	20,000	2	5
11	Mill drill	9,500	0	1
12	rough-mil	10,000	0	2
13	rough-mil	10,000	0	2
14	rough-mil	10,000	0	2
15	rough-mil	10,000	0	2

☐ Tool
 ☐ Surface
 ☐ Machining

Type of machining	Pocket making
Sub Number	0
Step	50,000
Relief	50,000
Machining Depth	1,667
Approach speed	100,000
Cutting speed	100,000
Offset direction	Left ▼
User definition	

☐ Keep display
 ☐ Display tools

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Fig.8

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List of Selected Tools

	Tool Name	Diameter	Machining diameter	Machining depth
1	Center drill	3,000	3,000	3,000
2	Drill (Highspeed)	9,000	9,000	17,600
3	Mill drill	9,500	9,500	15,000
4	Reamer (Highspeed)	10,000	10,000	15,000

OK

Cancel

Add

Delete

Fig.9

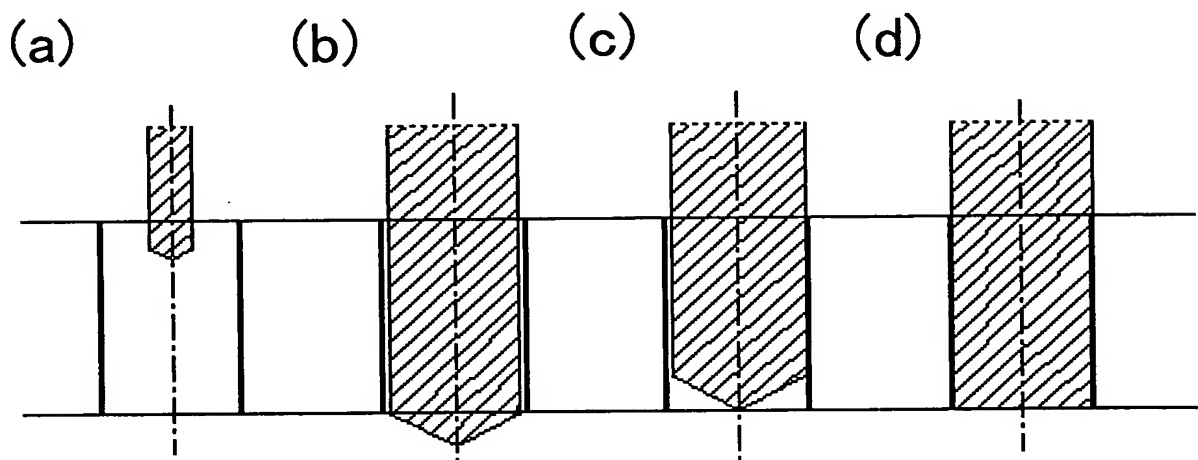


Fig.10

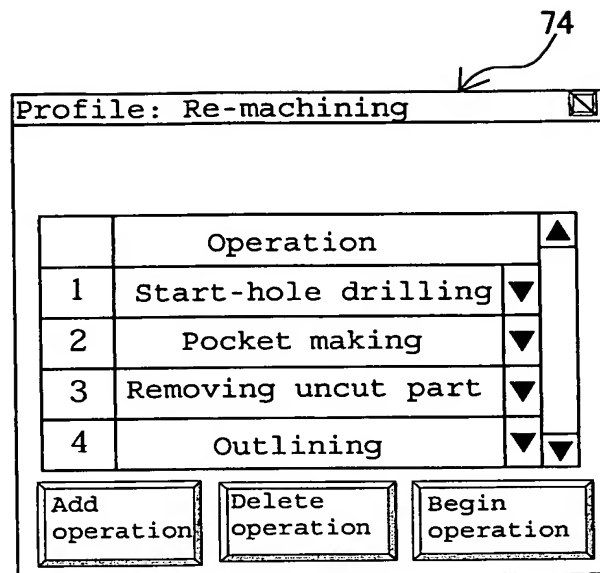
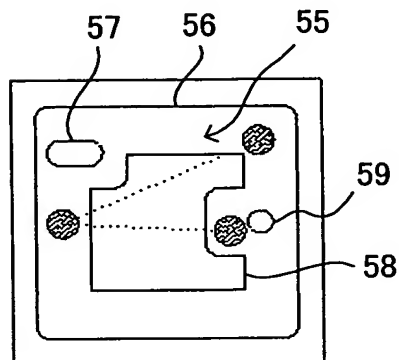


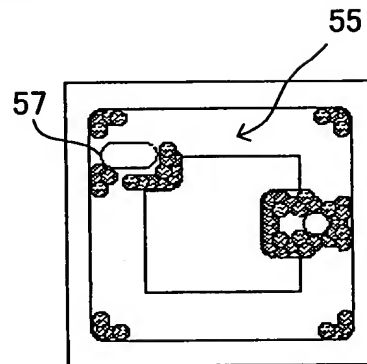
Fig.11

(a)



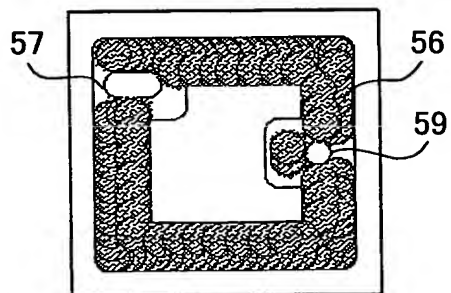
Start-hole drilling

(c)



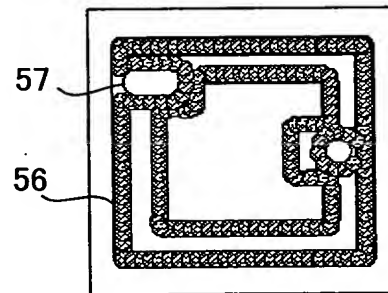
Removing uncut part

(b)



Pocket making

(d)



Outlining

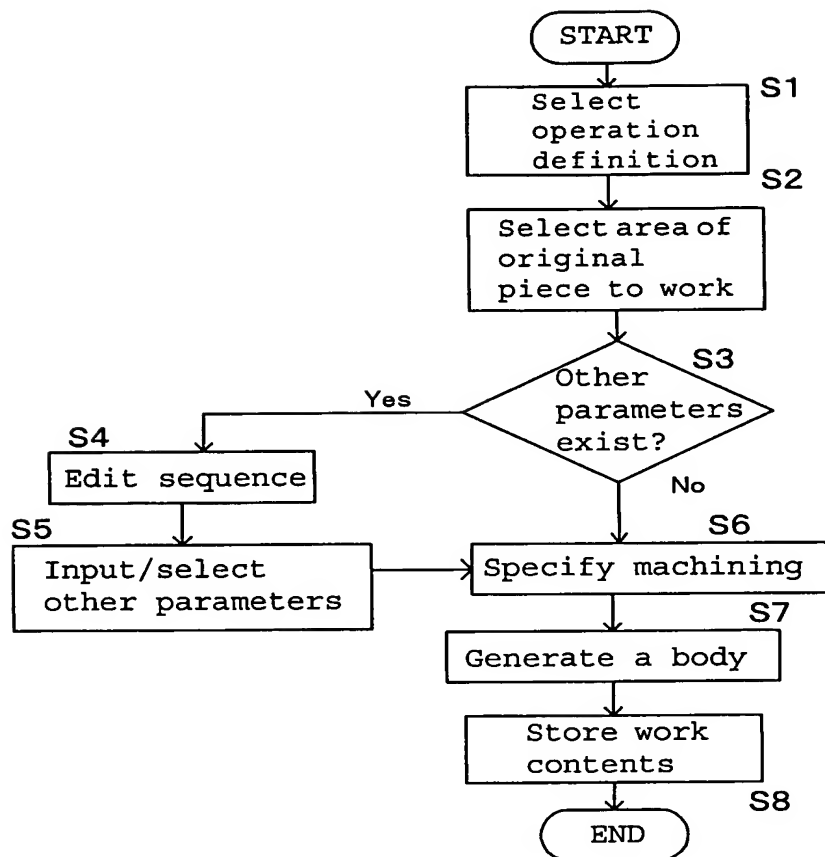


Fig. 13

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Hole Finishing Tool Selection

☒ First step: Diameter (mm)
Top Surface 10,000

Drilling (High speed) ▼

Drill (High speed) 9.000 9.000

☐

☐

☐

Edit sequence

☒ Hole Number of holes: 4

Start machining

75b

75a

Fig. 14

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List of Selected Tools

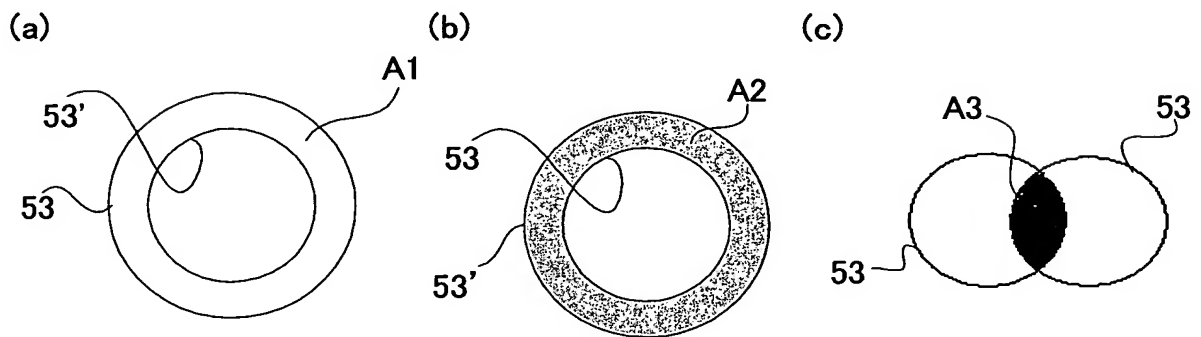
	Tool Name	Tool diameter	Machining diameter	Machining depth	Drilling depth per cycle [PC]
1	Center drill	3,000	3,000	3,000	3,000
2	Drill (High speed)	9,000	9,000	17,600	17,600

76a

76b

Add tool Delete tool OK Return to machining condition entry

Fig. 15



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/13524

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl⁷ G05B19/4097, B23Q15/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ G05B19/18-19/46, B23Q15/00-15/28

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1922-1996 Toroku Jitsuyo Shinan Koho 1994-2003
Kokai Jitsuyo Shinan Koho 1971-2003

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	JP 11-129141 A (Toyota Motor Corp.), 18 May, 1999 (18.05.99), Par. Nos. [0015] to [0017], [0029] to [0045]; Fig. 2 (Family: none)	1, 5, 6, 11, 12 2-4, 7-10
Y	JP 2001-62676 A (Canon Inc.), 13 March, 2001 (13.03.01), Par. Nos. [0032] to [0035]; Figs. 4 to 10 (Family: none)	2-4, 9, 10
Y	JP 11-235646 A (Toyota Central Research And Development Laboratories, Inc.), 31 August, 1999 (31.08.99), Par. Nos. [0052] to [0054]; Figs. 4 to 8 (Family: none)	3, 4

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

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considered novel or cannot be considered to involve an inventive
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considered to involve an inventive step when the document is
combined with one or more other such documents, such
combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

08- December, 2003 (08.12.03)

Date of mailing of the international search report

24- December, 2003 (24.12.03)

Name and mailing address of the ISA/
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/13524

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 1-233617 A (Fuji Xerox Co., Ltd.), 19 September, 1989 (19.09.89), Page 1; lower right column, lines 10 to 16; Fig. 4 (Family: none)	7, 8
A	JP 2002-116807 A (Toyota Motor Corp.), 19 April, 2002 (19.04.02), Full text; all drawings (Family: none)	1-12